



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/654,527	09/01/2000	Hideo Miyake	1614.1074	7021

21171 7590 05/15/2006

STAAS & HALSEY LLP
SUITE 700
1201 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER

MEONSKE, TONIA L

ART UNIT PAPER NUMBER

2181

DATE MAILED: 05/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/654,527	Applicant(s) MIYAKE ET AL.	
	Examiner Tonia L. Meonske	Art Unit 2181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 11-13, 15 and 16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 11-13, 15 and 16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Fritz Fleming
FRITZ FLEMING
Supervisor / PRIMARY EXAMINER 5/12/2006
GROUP 2100
AU 2181

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-8, 11-13, 15, and 16 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Faraboschi et al., US Patent 5,930,508 (herein referred to as Faraboschi).

3. Referring to claim 1, Faraboschi has taught a parallel processor performing parallel processing of one or more basic instructions contained in each of a plurality of instruction words delimited by instruction delimiting information, said parallel processor comprising:

- a. a plurality of instruction execution units performing processes in accordance with corresponding, supplied basic instructions in parallel (Abstract, Figures 1, 7, and 9, Functional units,);
- b. an instruction fetch unit fetching the instruction words one by one in accordance with the instruction delimiting information to generate a first instruction word format (column 5, line 45-column 6, line 19, Figure 6, element 630 is a first instruction word format stored in the alignment buffer, element 730 of Figure 7.); and
- c. an instruction issue unit recognizing and, in accordance therewith, selectively issuing each of the basic instructions supplied from the instruction fetch unit to one of the

Art Unit: 2181

corresponding instruction execution units to execute the issued basic instruction

(Abstract, Figures 1, 6, 7, and 9, column 4, line 57-column 5, line 4);

- d. wherein codes of the basic instructions are checked to identify the basic instructions (Figure 3, element 222, column 4, lines 40-46, instructions are decoded), and the basic instructions, so identified are associated with respective ones of said instruction execution units (column 3, lines 15-32, Each decoded instruction is associated with a functional unit.), said instruction execution units being associated with respective effective bits indicative of whether the basic instructions are supplied to said instruction execution units (column 3, lines 15-36, column 4, lines 57-column 5, line 4, Dispersal codes are indicative of which functional unit instructions are supplied to.).
4. Referring to claim 2, Faraboschi has taught the parallel processor as claimed in claim 1, as described above, and wherein the plurality of instruction execution units all have the same structure (column 4, lines 46-48, All of the instruction units have arithmetic units.).
5. Referring to claim 3, Faraboschi has taught the parallel processor as claimed in claim 1, as described above, and wherein:
 - a. at least two of the instruction execution units have different structures from each other (column 4, lines 46-48, Arithmetic units and multipliers are different structures.); and
 - b. the instruction fetch unit rearranges the basic instructions contained in each of the fetched instruction words, in accordance with arrangement of the plurality of instruction execution units, and then supplies the rearranged basic instructions to the instruction

Art Unit: 2181

issue unit (Abstract, Figures 1, 6, 7, and 9, column 4, line 57-column 5, line 4, column 5, line 45-column 6, line 19, elements 720, 730, 740, and 750).

6. Referring to claim 4, Faraboschi has taught the parallel processor as claimed in claim 1, as described above, and wherein:

- a. at least two of the instruction execution units have different structures from each other (column 4, lines 46-48, Arithmetic units and multipliers are different structures); and
- b. the instruction issue unit rearranges the basic instructions contained in each of the instruction words supplied from the instruction fetch unit, in accordance with arrangement of the plurality of instruction execution units, and then supplies the rearranged basic instructions to the instruction execution units (Abstract, Figures 1, 6, 7, and 9, column 4, line 57-column 5, line 4, column 5, line 45-column 6, line 19, elements 720, 730, 740, and 750).

7. Referring to claim 5, Faraboschi has taught the parallel processor as claimed in claim 1, as described above, and wherein:

- a. at least two of the instruction execution units have different structures from each other (column 4, lines 46-48, Arithmetic units and multipliers are different structures);
- b. the instruction fetch unit rearranges the basic instructions contained in each of the fetched instruction words, in accordance with arrangement of the instruction execution units (column 5, line 45-column 6, line 19, Figure 6, element 630 is a first instruction word format stored in the alignment buffer, element 730 of Figure 7. This stored instruction word is in accordance with the arrangement of execution units.), and

Art Unit: 2181

- c. then supplies the rearranged basic instructions to the instruction issue unit (Figure 7); and
 - d. the instruction issue unit further rearranges the basic instructions contained in each of the instruction words supplied from the instruction fetch unit, in accordance with the arrangement of the instruction execution units, and then supplies the rearranged basic instructions to the instruction execution units (Abstract, Figures 1, 6, 7, and 9, column 4, line 57-column 5, line 4, elements 640, 740, and 750.).
8. Referring to claim 6, Faraboschi has taught the parallel processor as claimed in claim 3, as described above, and wherein:
- a. at least two of the instruction execution units have different structures from each other (column 4, lines 46-48, Arithmetic units and multipliers are different structures.); and
 - b. the instruction fetch unit fetches an instruction word that contains basic instructions arranged in advance in accordance with the arrangement of the instruction execution units (column 5, line 45-column 6, line 19, Figure 6, element 630 is a first instruction word format stored in the alignment buffer, element 730 of Figure 7, in advance of execution.).
9. Referring to claim 7, Faraboschi has taught the parallel processor as claimed in claim 1, as described above, and wherein, depending on the type of a basic instruction being currently executed by one of the instruction execution units, the instruction issue unit issues a next basic instruction before the execution of the basic instruction being currently executed is completed (column 4, lines 46-50).

Art Unit: 2181

10. Referring to claim 8, Faraboschi has taught the parallel processor as claimed in claim 7, as described above, and wherein, if a supplied basic instruction does not have data dependency or control dependency, or does not share resources with a basic instruction being currently executed by one of the instruction execution units, the instruction issue unit issues the supplied basic instruction before the execution of the basic instruction being currently executed is completed (column 4, lines 46-50, column 1, lines 16-62).

11. Referring to claim 11, Faraboschi has taught a parallel processor as claimed in claim 1, as described above, and wherein a

a. first instruction word format is converted into a second instruction word format, the first instruction word format indicating a first arrangement of instruction words from the instruction fetch unit (Figures 6 and 7, elements 620, 630, 720, and 730), and the second instruction word format indicating a second arrangement of instruction words which corresponds to the instruction execution units (Figures 6 and 7, elements 640, 650, 740, and 750).

12. Referring to claim 12, Faraboschi has taught a parallel processor as claimed in claim 1, as described above, and further comprising a conversion unit, wherein the conversion unit converts a first instruction word format into a second instruction word format on the basis of the effective bit, corresponding to the instruction execution units, indicating whether the corresponding instruction execution unit is available (Figures 6 and 7, The effective bits indicate the availability of the corresponding execution units by indicating which functional unit assumes the responsibility of executing the instruction. The conversion performed by element 740 uses the

Art Unit: 2181

effective bits to expand the instruction in element 650 such that NOP's are inserted into the new instruction format.).

13. Referring to claim 13, Faraboschi has taught a parallel processor as claimed in claim 12, as described above, and wherein the first instruction word format indicates a first arrangement of instruction words from the instruction fetch unit (Figures 6 and 6, elements 620, 630, 720, and 730), and the second instruction word format indicates a second arrangement of instruction words which corresponds to the instruction execution units (Figures 6 and 6, elements 640, 650, 740, and 750).

14. Referring to claim 15, Faraboschi has taught a parallel processor as claimed in claim 1, as described above, and wherein the instruction issue unit issues the basic instructions to the corresponding instruction execution unit based on the interface (Figures 6 and 7, The expansion logic issues the instructions to the disbursed instruction buffer.).

15. Referring to claim 16, Faraboschi has taught a parallel processor performing parallel processing of one or more basic instructions contained in each of a plurality of instruction words delimited by instruction delimiting information (Figures 5 and 6), said parallel processor comprising:

- a. a plurality of instruction execution units performing processes in accordance with corresponding, supplied basic instructions in parallel (column 4, lines 46-50, column 1, lines 16-62, Figure 1);
- b. an instruction fetch unit fetching the instruction words one by one in accordance with the instruction delimiting information to generate a first instruction word format

Art Unit: 2181

(column 5, line 45-column 6, line 19, Figure 6, element 630 is a first instruction word format stored in the alignment buffer, element 730 of Figure 7.);

c. an interface having effective bits corresponding to the instruction execution units and indicating the corresponding instruction execution unit for each instruction word (column 3, lines 15-36, column 4, lines 57-column 5, line 4, column 7, line 60-column 8, line 55) which have no attached dispersal information (column 2, line 65-column 3, line 15, column 8, lines 19-29, NOP's have no attached dispersal information.), checking codes of the basic instructions to identify the basic instructions (Figure 3, element 222, column 4, lines 40-46, instructions are decoded), and associating the basic instructions with respective ones of said instruction execution units (column 3, lines 15-32, Each decoded instruction is associated with a functional unit.), said instruction execution units being associated with respective effective bits indicative of whether the basic instructions are supplied to said instruction execution units (column 3, lines 15-36, column 4, lines 57-column 5, line 4, Dispersal codes are indicative of which functional unit instructions are supplied to.).

Response to Arguments

16. Applicant's arguments filed February 27, 2006 have been fully considered but they are moot in view of the newly applied grounds of rejection above.

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 2181

18. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tonia L. Meonske whose telephone number is (571) 272-4170.

The examiner can normally be reached on Monday-Friday, with every other Friday off.

20. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fritz Fleming can be reached on (571) 272-4145. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

21. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

tlm

Application/Control Number: 09/654,527

Page 10

Art Unit: 2181

Fritz M. Fleming
Supervisory **FRITZ FLEMING**
PRIMARY EXAMINER 5/12/2006
GROUP 2100
AU2181